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Education Consortium for the Advancement of STEM in Egypt (ECASE)

QUARTERLY PROGRESS REPORT
OCTOBER – DECEMBER 2013

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for the Advancement of STEM in Egypt
(ECASE)

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CONTENTS

Acronyms

21PSTEM	The 21st Century Partnership for STEM Education
ACT	American College Testing (exam)
AIP	Annual Implementation Plan
AUC	American University in Cairo
BOT	Board of Trustees (school)
CGP	College Guidance Program
COP	Chief of Party
DCOP	Deputy Chief of Party
ECASE (USAID)	Education Consortium for the Advancement of STEM in Egypt
EGP	Egyptian Pounds
GILO	Girls' Improved Learning Outcomes Project (USAID)
GOE	Government of Egypt
HR	Human Resources
ICT	Information and Communications Technology
MAP	Management Assessment Protocol
M&E	Monitoring and Evaluation
MOE	Ministry of Education
MOHE	Ministry of Higher Education
NCEEE	National Center for Educational Evaluation and Examination
PARLO Outcomes	Proficiency-based Assessment and Reassessment of Learning
PAT	Professional Academy of Teachers (MOE)
PD	Professional Development
PMP	Performance Monitoring Plan
SCOPE	Standards-based Classroom Observation Protocol for Egypt
SEPUP	Science Education for Public Understanding Program
STEM	Science, Technology, Engineering, Math
STTA	Short Term Technical Assistance
TIES	Teaching Institute for Excellence in STEM
TFI	The Franklin Institute
TILO	Technology for Improved Learning Outcomes (USAID)
WL	World Learning
US	United States of America
USAID	United States Agency for International Development

1. Summary of activities

This Quarterly Progress Report (QPR) details activities and accomplishments of the USAID – funded Education Consortium for the Advancement of STEM in Egypt (ECASE) Program, from October 1, to December 31. The report discusses work undertaken by World Learning worked collaboratively with consortium partners (21PSTEM, TIES, and TFI).

- **Wind-up Plan** - ECASE has just completed the first year of a four-year implementation plan and started its second when USAID requested a wind-up of activities. The October 13, 2013 notification received by ECASE states that *'In the meantime, existing activities will be given sufficient time and resources to allow for an orderly close out, and in some cases completion.*' To protect USAID's investment and arrange for an orderly wind-up of project activities, ECASE chose to center its wind-up plan around completing a sustainable educational model and only concentrate on the two existing schools in the greater Cairo area to reduce the time needed to complete this model.

A modified version of the plan has been developed leaving the project with mainly four objectives instead of five. Some of the activities have come to end and other ones have been streamlined in order to move forward to attain sustainability for the two existing schools. It is worth to note that an approval has been received by the ECASE project on the Wind Up Plan by the end of the first quarter of year two. Therefore, this report illustrates the activities implemented according to the modified plan.

- **USAID Deputy Mission Director Visit –** On November 24, Dr. Anne Patterson, the Deputy Mission Director in Egypt, visited the October STEM School on Novembers 24th accompanied by Mr. Thomas Crehan, Team Leader for Higher Education, and Ms. Hala ElSerafy ECASE's Agreement Officer Representative to meet the students and learn from the teachers and principal about the schools and its progress. Dr. Patterson stopped by several classrooms in action, the language laboratory, the library, the science labs and the fab Lab. She had a chance to talk to the students and viewed their capstone projects on exhibit. She discussed various capstone projects with the students and was impressed with their ideas and models. She saw several models in action and had a chance to meet with a host of teachers discussing how the students are improving, what they are learning and what are their prospects in college. The visit was very effective; it gave a chance to Dr. Patterson to learn more about STEM schools in general and the October school in particular, it also offered a good chance for the students and teachers to interact directly with a senior USIAD official.

- **College Guidance -** A process to provide guidance to Grade 3 students at 6th of October School was initiated. This process involved one-on-one support to 27 students interested in international college opportunities. As well as giving support to the students and their families. In addition, usable student transcripts for use by all international universities were generated.

The ECASE team formalized a plan for the current year to utilize the ACT as a college readiness exam and to create Tests of Concepts and Final exams for STEM course work. A workshop was held on November 21, 2013 to get MOE approval on grade 3 students grading.

- **Capstone exhibition** - ECASE also supported the culmination of Semester 1 student work, resulting in a Capstone exhibition on December 29,30 2013 for prototypes and January 1, 2 2014 for posters, highlighting on-going project work over the past semester. The capstones offer students connectivity to Egyptian Grand Challenges while integrating with the STEM curriculum in hands on projects. Highlights of this activity included:

  - The 6th of October school Grades 1 and 2 Prototype exhibition at the school. Twenty evaluators, including teachers and external evaluators participated in mixed teams.
  - The Ma'adi School Grades 1 and 2 Prototype exhibition at the school. Twenty-seven evaluators, including teachers and external evaluators participated in mixed teams.

- The 6th of October school Grade 3 Model/Poster exhibition at the Educational City main building. Sixteen teams and eight evaluators participated.
- Poster presentations for both schools Grades 1 and 2 at the Educational City main building. Ninety-two teams presented and a team of 26 external evaluators participated.

- **Professional Development** - ECASE worked on an overarching plan and accomplished the additional task of delivering one week of pedagogical professional development support and training by conducting classroom observations, providing one-on-one support for teachers, facilitating professional learning community (PLC) meetings, and sharing resources and tools with school leaders. ECASE also recruited professional development consultants to provide additional on the ground pedagogy support. These new consultants will travel to Egypt at the beginning of the next quarter to conduct new teacher training.

ECASE provided a key STEM curriculum expert on the ground for 9.5 weeks over the last quarter. This activity and support proved critical to the overall project, providing on-going expertise and guidance to the schools through curriculum professional development, one-on-one coaching, supporting teacher interviews, planning with the field office, and evaluation of the Curriculum 1.0 through over 35 classroom observations. Information obtained from these sessions will be used to revise the curriculum for the next semester and to make enhancement for a Curriculum 2.0 release for the STEM schools.

Meanwhile the project curriculum team continued their work to develop and refine the 3 year Integrated STEM Curriculum 1.0 with learning outcomes and unit materials. The materials related to mechanics and Physics had to be custom developed based on the Egyptian Math Consultant specifications. The assessment team worked on assembling a test bank of STEM concepts, midterm and final exam construction for the 1st semester, and administration of six baseline assessments. Go to meeting training sessions were coordinated including initial PARLO Tracker training.

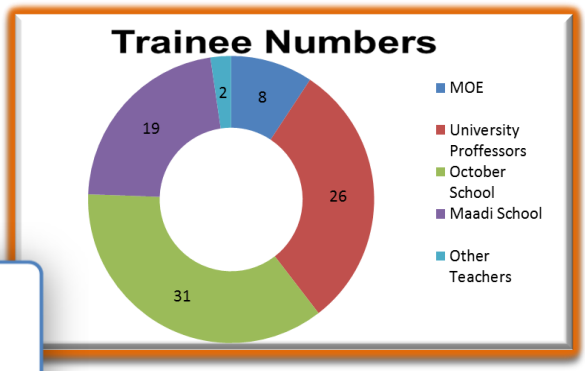
- **Private Partnership Participation (PPP)** - In this quarter, ECASE succeeded to establish some partnerships with a number of universities, institutions, and private sector firms, reaching out for promising cooperation and support. As a result of the Wind Up Plan, ECASE is directing more focus towards achieving sustainability to the existing schools which confirms the importance of the role of the PPP in terms of securing **scholarships, direct funding, and in-kind contributions.**

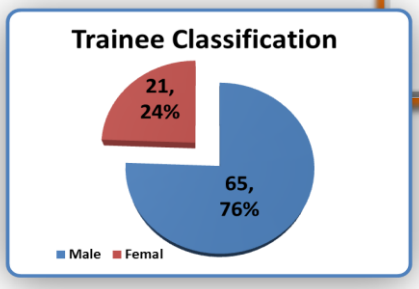
- **Applied Learning** - ECASE provided ongoing planning and preparation of extracurricular opportunities that are critical to the experience of STEM students and exemplify the STEM curriculum in real world and exploratory environments. The project engaged a small team of Institute experts to develop a framework for launching the Discovering Science live science demo program. Ultimately, the program consists of two main video assets:

1. A "how to" video that gives viewers the tools they need to develop a great demo

2. A seed- library of science demos that viewers can watch, adapt, and replicate for their own needs and the needs of their audiences.

- **Training –** ECASE project implemented several professional development sessions for both October and Ma'adi schools plus the workshop held to approve the plan to grade and rank graduating students. The total number of trainees this quarter is 86 distributed as 65 males and 21 females.





Activities leading towards accomplishment of Program objectives

2.1 Project Management

During the past quarter, the ECASE project team was asked to "wind-up" the work in response to funding restrictions by USAID as determined by the political situation in Egypt. The ECASE team envisioned a wind-up plan to complete the STEM school model and to enable its institutionalization in the existing STEM schools. The proposed wind-up process is an abbreviated version of the original four year plan that will accommodate the goal of building a sustainable model within a total of three rather than four years. To do this it is critical to provide training and support to teachers and schools' leaders through the 2014-2015 school year so that the wind-up efforts focus on protecting USAID's investment to date, and helping to ensure the sustainability of the model once USAID is no longer involved with these schools. The objective is for the schools to be self-sustaining STEM schools that continue to admit prospective students from preparatory schools across the country and graduate STEM students that are college- and career-ready.

Through the ECASE project, even with fewer STEM schools than envisioned, Egypt will have two model STEM schools that embody trans-disciplinary collaboration, project-based learning, real world applications, critical thinking, and a pioneering spirit. To support the investment and vision, a MINIMUM of three full years of support to these schools is required. Even this timeframe will leave many teachers and the support infrastructure with a significant lift to providing on-going sustainability. The proposed wind-up plan offers Egypt with the minimum requirements to make investment in these two schools successful. Further, reducing the tasks proposed or stopping work even sooner will involve damaging not only the investment made by USAID, but will directly and negatively impact the futures of more than 500 students currently enrolled in the schools.

Specific key impacts of streamlining or removing activities are contained in section 3.0 on risk.

The wind-up plan includes activities to support specific work within the two existing model STEM schools to enable at least the currently enrolled Grade 2 students to complete their high school education and graduate under the stewardship of USAID. Further, the tasks proposed within ECASE's wind-up plan offer only the essential elements that enable the most critical systems, knowledge, and training to hand-over USAID's investment.

As per a work plan and justification submitted by ECASE to
USAID; a summary of the activities in the wind-up plan is shown below:
These titles do not correspond to the terminology or sequence of the work plan submitted, we need to correct

1. *Curriculum Completion and Training* – to complete the STEM curriculum and sustainable implementation
2. *Development and training of Assessment Instruments for Student Course Work and College Admission* – to create, pilot, and improve formative, end of course and college acceptance exams
3. *STEM Pedagogical Professional Development for New and Existing Teachers* – to continue to train teachers on the techniques of trans-disciplinary and project based STEM classrooms
4. *Extra-curricular STEM Programs Implementation* – to create and implement out of school programs which engage students more fully in the STEM real world opportunities
5. *Implementation of Student and Teacher Selection Criteria* – to create, implement and improve teacher and student selection criteria for STEM schools
6. *STEM School Design Model Codification* – to document the STEM school model for replication to additional schools in Egypt
7. *STEM School Network Model Creation* – to establish a framework to enable connectivity and knowledge transfer between STEM schools as a way of accelerating innovation and progress
8. *Capstone Implementation and Training for all Grades* – to formalize the capstone process and ownership by the schools by offering guidance, PD, and structure
9. *College Guidance Systemization and Support for Local and International College Admittance* – to provide an approach to college entrance guidance for all graduating students
10. *Model School Sustainability Activities* – to provide on-going support to enable the implementation of sustaining activities such as protocols, procurement process, etc.
11. *Public Provide Partnership (PPP) Integration and Supporting Activities* – to provide on-going connectivity to PPPs in support of school sustainability and internship/extracurricular opportunities for students
12. *National STEM Board* – to provide support if needed to strengthen MOE capacity at the systems and policy level to sustain and replicate the model schools

To further support the overall program and consistent planning among the project team, two distinct project retreats were held with leadership staff from all organizations. The first meeting was held in Cleveland on December 5, 2013 to review the status of the

curriculum, capstones, and assessment work and planning associated professional development between the semesters. The second retreat was held in Philadelphia on December 10, 2013 to review the feedback from the ground and discuss the pedagogical STEM training needs of new and existing teachers and the requirements and process to vet the selection of new teachers. This second meeting also served as an opportunity to meet potential new professional development staff from TFI. Ultimately, it was determined that 3 weeks of professional development would be offered as follows:

- Week of January 19, 2014 – New teacher orientation and pedagogical STEM training
- Week of January 26, 2014 – New teacher orientation to the curriculum, capstones, and assessments and integrated STEM professional development
- Week of February 2, 2014 – ALL staff (new and existing) training on curriculum, capstones, and assessments for Semester 2

Teacher selection was discussed following an advertisement launched by PAT. The team agreed on a plan to filter teacher selection through 3 key mechanisms:

1. English Proficiency
2. STEM Aptitude
3. Content Knowledge

While not part of the original plan for the quarter, the team focused on the critical importance of properly selecting teachers for sustaining the schools. Filtering of applicants was addressed by offering teacher applicants with online tests of the first two items through Google Docs/Forms to survey teacher applicants and consolidate their inputs into a single repository. The STEM Aptitude survey was created for this purpose of the last quarter. Outcomes of the tests were used to down select teachers for further concept inventory testing and interviews locally. In order to meet the timing of the professional development, it is likely that teacher interviews will occur in conjunction with the professional development the week of January 19, 2014. The team representatives available will support interviews on the ground from all organizations.

During visits this quarter, it became evident that laboratory safety is an issue that requires immediate action by the team. While outside the precise scope of the work, it became apparent that students and teachers were unfamiliar with very basic lab practices that support safety (e.g. gloves, eyewear, use of a chemical hood, no food in the lab, two persons in lab at all times). To rectify this issue, the team is assessing immediate action while also forming a rapid response team to enable a long-term solution – one that will likely involve a combination of protocol development, professional development, and leadership coaching. The plans will be based on standard safety protocols used in other school science labs and should include training for teachers, laboratory managers, and students, as appropriate, to develop a safety-first culture in addition to rehearsed emergency response protocols. There are many avenues available at these schools to reinforce the training including student projects to create signage, safety assessments in the capstone programs, and use of the Fab Lab to set the standard for safety.

Finally, continuous oversight and management support has been provided in an on-going capacity to the team. While the focus has been on wind-up planning, on-going support has been provided to create task management processes (e.g. Capstones, Curriculum transfer

to Google Drive, Fab Lab Training) and scheduling in Google drive. This work is described further in the next section under Objective 1.

2.2 Project Activities

This section summarizes key accomplishments against the submitted Wind-Up Plan for the four objective areas. All project activities are part of a larger iterative process and many aspects of individual activities overlap with other activities.

Objective 1: Complete Sustainable Curriculum and Assessments Processes and STEM Model System (formerly objective 4)

To **assess Curriculum 1.0 pacing, review lesson plans, collect feedback, and assess needs for Curriculum 2.0**, ECASE provided 9.5 weeks of on the ground support by a single subject matter expert. This support was provided continuously over 7.5 weeks in October and November 2013 and was supplemented by a short two-week stay in December 2013. During this time, 35 classroom observations were conducted to assess Curriculum 1.0 in terms of fidelity of implementation, including use of materials, pacing, and lesson plans. The observations were also used to collect feedback from teachers and to assess options for Curriculum 2.0.

General observations concluded that most teachers are sincerely attempting to implement the STEM curriculum, but they exhibit novice behavior in this approach, having never written lesson plans, used learning outcomes, or utilized formative assessment to gage student learning except at the most rudimentary levels. Because student mastery of learning outcomes are the focal point of the curriculum, it is critical that teachers learn to use learning outcomes in writing their lesson plans and in designing both formative and summative assessments for the students. Additionally, the science teachers have had very little experience, if any, in managing laboratory investigations for their students.

While the students are excelling in their capstone work in which they have to apply their understandings from their regular STEM courses, there is no way to actually assess the full impact of the curriculum until it is implemented as designed. For this reason, ECASE will continue to monitor teachers' lesson plans, adherence to learning outcomes, pacing and writing and administering of formative and summative assessments to gage student learning. Besides intensive classroom observation, these are limited tools to assess implementation of the curriculum. To obtain further input on status of the curriculum, detailed focus groups with teachers by discipline will occur in late January 2014. Input from these focus groups will provide a greater understanding of the implementation of the curriculum and necessary changes for the upcoming semester and ultimately for Curriculum 2.0.

ECASE has made extensive **revisions to math curriculum materials** in response to realities on-the-ground. Grade 3 students had not yet completed required material in mechanics and algebra/solid geometry that would, under original plans, have be completed in Grade 1 and/or Grade 2. Consequently, ECASE created two new "bridge" curricula spanning Semester 1 and Semester 2 for the Grade 3 students: a *Mechanics Bridge* and an *Algebra/Solid Geometry Bridge*. This work entailed creation of learning outcomes, selection and frequently creation of teaching materials, and creation of assessment activities, as well as working with the Grade 3 teachers to introduce the new material.

In a less extensive but still significant adaptation, ECASE responded to the Year 1 teachers' request to assist them in modifying the curriculum to accommodate the fact that they are moving more slowly than expected as they learn to use new materials. As such, ECASE cut out about a week of work from the Grade 1 Vectors unit and moved the unit to Semester 2.

The team has resolved on-going questions regarding the US approach to teaching Mechanics by creating all-new curriculum materials for Grade 2, Semester 2 in both Physics and Mathematics. In the U.S., Mechanics (Newton's Laws, Energy, etc.) are addressed in physics class. In contrast, Egyptian students are required to have a Mechanics credit in math class. While teaching materials have been developed to implement the hands-on, experimental, active-learning approach that Physics Education Research indicates is needed for all students--including high achievers--these materials are mainly designed to be used in science classes, not math classes. ECASE resolved the problem by tightly linking Grade 2, Semester 2 math and physics. In most cases, physics classes will involve hands-on experiments looking at data and developing theory; math class will be developing the mathematical tools needed to understand and analyze the theory and to apply the theories developed in science class to use them to solve a wide variety of sophisticated problems. ECASE utilized outside Physics consultants to help design the needed curriculum materials.

The project also developed "ideal" materials that will serve as the basis for Revised Curriculum 2.0 that will be written this summer. The team also selected a Statistics book and began developing a Statistics curriculum. Finally, ECASE initiated a process to identify and document problems teachers have implementing Curriculum 1.0 in order to plan revisions and improvements.

In the next quarter, ECASE will be implementing the curriculum materials that were developed in 2013 as part of the on-the-ground PD. Also, the Statistics curriculum will be completed. This will need to be both in an "interim" version to be used near the end of Grade 3 this year, and a more complete version to be used starting next year.

ECASE anticipates ongoing work to help teachers adapt curriculum to realities on the ground. For example, turnover in the Grade 3 teaching staff has led to Grade 3 students being behind in material covered--and on-going help is likely needed to support Grade 3 teacher adaptation.

Great gains have been made in **procurement to support the curriculum**, though much still needs to be done. Kits for Geology and Chemicals for grades 1 & 2 have been held up in customs for several months and expected to be received in Feb 2014. In as many cases as possible, ECASE worked with teachers to attempt to create work-around for these missing resources. ECASE inventoried all classrooms for basic presentation equipment (projectors, computers, e-beams, etc.) and procurement for the un-equipped classrooms at both schools has been initiated but will only take place after the approval of the Wind up is done.

Because the 6 October laboratories were stocked with instructional equipment prior to the ECASE project team's engagement in the project, the additional acquisition of the kits that specifically support the curriculum have yielded fairly well equipped labs. The Ma'adi school has had no such ancillary equipment purchases. As a result, while they now have most of the basic materials needed for implementation of the investigations in the curriculum,

they still need other equipment for additional laboratory support, especially for advanced labs. During the next quarter, ECASE will be working to reconcile what the school currently has with the needs of the advanced high school laboratories to determine requirements for additional standard equipment.

Additionally, over this next quarter, the project team with support from all partners is establishing a Committee for Localizing Science. This committee consists of teachers, university faculty, Ministry consultants and representatives from local industry and laboratories. The committee will be in charge of examining all laboratory investigations in order to determine how to increase their contextual application to Egypt. It will also be exploring local sources of materials or alternative materials in order to be both more cost effective and more sustainable.

To **provide staff to gather requirements for the Assessment work,** Two assessment staff were sent to Cairo, in October and November, 2013. They met with MOE to finalize assessment plans and for MOE approval. ECASE continues to work to ensure all assessment recommendations are implemented. The field office has also facilitated contact with the MOE for several purposes, including procuring approval for assessment plans and translation of English assessment items into Arabic for baseline tests (and plans for translation of end-of-course assessments). As part of this plan, the team worked with the MOE to finalize a 2013-2014 Assessment Plan Matrix to finalize grades for graduating students.

The final grades based on the matrices shown below will be used to determine each student's ranking for Egyptian public university admissions. The tables shown below have been accepted as revised specifications for the MOE accepted matrix and the basis upon which all discussions and decisions on the path forward for the current school year were made.

Science Branch

	Subject	URT-University Readiness Test	TOC-Tests of Concepts	Capstone	Laboratory/ Experiments (Semester 1 Exam)	Research/ Presentation (Semester 2 Mid-term)	Discussion & Participation (Semester 2 Exam)	Total
1	**Arabic**	50% Developed by MOE	30% Developed by MOE	-	-	10%	10%	100%
2	**French**	50% by Test de Francais International	30% Developed by MOE	-	-	10%	10%	100%
3	**English**	50% ACT English	30% Developed	-	-	10%	10%	100%

			by MOE					
4	**Biology**	40% ACT	20%	20%	5%	5%	10%	100%
5	**Physics**		20%	20%	5%	5%	10%	100%
6	**Chemistry**		20%	20%	5%	5%	10%	100%
7	**Environmental Science & Geology**		20%	20%	5%	5%	10%	100%

Mathematics Branch

	Subject	URT-University Readiness Test	TOC-Tests of Concepts	Capstone	Laboratory/ Experiments Semester 1 Exam	Research/ Presentation Semester 2 Mid-term	Discussion & Participation Semester 2 Exam	Total
1	**Arabic**	50% Internationally Benchmarked Test Recommended by MOE	30% Developed by MOE	-	-	10%	10%	100%
2	**French**	50% By Test de Francais International	30% Developed by MOE	-	-	10%	10%	100%
3	**English**	50% TOEFL	30% Developed by MOE	-	-	10%	10%	100%
4	**Applied Math**	40% ACT	20%	20%	5%	5%	10%	100%
5	**Pure Math**		20%	20%	5%	5%	10%	100%
6	**Physics**		20%	20%	5%	5%	10%	100%
7	**Chemistry**		20%	20%	5%	5%	10%	100%

ECASE provided support to create the Tests of Concepts (TOC) and Semester Exams. Ultimately, the TOC will be generated by the MOE through Ministry consultants, in cooperation with the teachers and their use of learning outcomes. The assessment will be used to capture important areas of student learning in each of the humanities subjects. The ECASE assessment team has obtained the English versions of TOCs for Mathematics, Biology, Chemistry, and Physics.

The TOCs will then be piloted with students in non-STEM schools in Egypt. ECASE has already pursued obtaining permission from two governmental experimental Schools in Cairo to pilot the TOCs with four sections of their students (two using an American curriculum and two using an IG curriculum). ECASE will be responsible for designing and implementing the pilot, also analyzing results. Following the pilot, the tests will be updated

and prepared for use in June 2014. Alternate versions of the test will be produced for the second session of testing in August 2014.

In addition, ECASE is providing support to the Semester 1 Final Exam. On-going support for both mid-term and final exams next semester is under discussion. Through meetings on both trips, an assessment plan was finalized, presented to the Ministry of Education for approval, and was approved. This plan outlined how students will be assessed for graduation and admission to Egyptian universities. The plan operationalized a ministerial decree outlining several categories of assessment. Those categories include: college readiness test, tests of concepts, capstone, and three additional categories. Those three additional categories were replaced with three tests to be given during the school year: a Semester 1 Exam, a Semester 2 Midterm, and a Semester 2 Final Exam. Protocols were created to make these tests objectively created and graded. The process includes teachers putting together a bank of questions, those questions being edited by the MOE, and the test being finalized by ECASE staff who is currently working on finalizing the Semester 1 Exams for all STEM courses.

In the next quarter, ECASE will finalize the Semester 1 Exams, troubleshoot the process for creating the tests, and work through the process again creating the Semester 2 Midterms for March. ECASE will also provide training for Humanities staff at the Ministry of Education in producing high-cognitive-demand test items in January/February.

In the next quarter, and to be completed by February 2, 2014, the MOE will grade the tests with simultaneous by independent grading by teachers. The MOE and teacher grades will be averaged for a final score. Data entry will be handled by ECASE.

In the next quarter, a trip to Egypt is planned for January/February, 2014. Assessment team members will continue to work with the field office to ensure all assessment plans are successful.

To **initiate efforts to administer the ACT/college readiness exam**, ECASE has been in continuous conversation with the ACT to use a protected, released form of the official ACT as the University Readiness Test (URT) for graduating seniors in the STEM school for the 2013-2014 school year. During this quarter, it was decided and agreed upon by ECASE partners that the ACT will be the test used as the URT. The plan was presented to the Ministry of Education and was approved. ECASE contacted ACT to formalize a contract. ACT is currently having the contract reviewed by external council with knowledge of Egyptian copyright law and should be finalized in early January.

In the next quarter(s), once the contract is signed with ACT, the plan is for ECASE to purchase 100 ACT test booklets. Two test booklets will be sent to Egypt in January, 2014,

for the Math and Science subtests of the ACT to be translated into Arabic. Those translations will be back-translated into English to verify the work. Tests will be printed and ready long before the planned administration the first week of June, 2014. ECASE will administer and score the tests in June. It is still in question, though, whether the ACT test should be administered in English or translated in Arabic, this is because 27 students applied to take it in English and succeeded in doing so in December. Both options are being weighed and the best suited one will be implemented.

Objective 2: Build the capacity of STEM school professionals through sustained training (formerly objective 3)

Worth mentioning, the ELP did not provide any support for the current school teachers in both schools during this semester. The teachers did not show interest in attending any of the ELP courses due to their tight schedule during the school day. Instead, they requested the training to run during the summer break while they have less STEM training and work commitments.

In efforts to both **provide training of Fab Lab teacher managers and students** and to **formalize a virtual training schedule for integration of Fab Lab with the curriculum**, ECASE supported several activities to install, train, and plan utilization of the Fab Labs. The two Fab Labs were installed at 6th of October and Ma'adi between Oct. 7th and Oct. 30th, 2013. During this time ECASE worked with Fab Lab Egypt to direct the installation from the Egypt side. The Fab Foundation and partners from Shopbot supported the installation of both labs remotely. The Director of the Fab Foundation was able to support the installation in person from Oct. 19th- Oct. 23rd.

In addition, during this quarter ECASE finalized a training plan outline and developed preliminary training activities for Fab Labs. This training was adapted during the on-the-ground November training to better fit the time and personnel restrictions, but still serves as the framework for the training to be done in the first quarter of 2014. Training commenced Nov. 4th when an ECASE Fab Lab guru from Fab Lab Barcelona traveled to Cairo to work with staff and students at the two school labs and complete some unfinished parts of the installation, including finishing the setup of the Shopbot at Ma'adi and connection of polycomms at both sites. During the training, ECASE worked with Fab Lab Egypt to provide basic equipment training to the Fab Lab Managers and teacher leaders at both schools. ECASE also provided basic equipment training, with some relevance to the first semester capstone content, to a selected group of students at each school. Students were selected based on their previous participation in Fab Lab design and planning meetings and an English Language competency assessment.

At each school, small groups of students were trained in depth on one machine each to yield a subset of students proficient at each component of the Fab Lab. ECASE also gave a Fab Lab preview to the teachers at each school, priming them for the Fab Lab training to come. A weekly meeting was established for the ECASE Fab Lab Team and Fab Lab Egypt to touch base on the day-to-day operations of the Fab Lab and to address student needs. A To-Do list has been established to track the tasks underway in each lab. Late in the fourth quarter, the 6th of October lab also implemented a mechanism to track the student use of the lab. The Ma'adi lab has been asked to implement a similar tracking mechanism as well.

Some Fab Lab activity was already apparent in the Semester 1 Capstone events. Several prototype teams used the lab to create signs out of wood or vinyl for their team's prototype exhibition, and fabricated a water-driven impellor using the 3D printer.

During the next quarter, the weekly Fab lab meetings and student use tracking will continue and provide the context for the implementation of the training of the full student body at each school and the continuation of the training for the Fab Lab Managers and Capstone Leaders. The training framework established in the fourth quarter of 2013 will be built upon to develop the afterschool mini-courses for the students to take at each site. These courses will be aligned to the capstones. Through these trainings, the students will develop skills needed to collect badges in each of the Fab Lab competencies. The Fab Lab Managers will be enrolled in Fab Academy along with representatives from Fab Lab Egypt. ECASE Fab Lab guru, in addition to assisting with the student training, will serve as the Fab Academy Advisor for this cohort. The ECASE Fab team will be assisting with all of the above mentioned work and continue to support the labs to ensure their smooth operation. In addition, the ECASE Fab team will be working with the Capstone teams to integrate Fab Lab use and competencies into the Capstone curriculum.

To continue to procure essential educational infrastructure to support curriculum and experiential classroom activities, ECASE created an on-line procurement form to be used to capture any additional curriculum support materials for the upcoming semester. The form was tested late in the quarter to capture needs of additional lab equipment. Additional math books also are expected to be needed during Semester two, but will be determined after the focus groups reviewing the outcomes of the Semester 1 curriculum. Ultimately, the procurement form created supports USAID procurement rules to obtain details and quotes for each item, but it does not yet offer support and connectivity to the to be established Committee for Localizing Science described previously. During the next quarter, the on-line form will be updated to reflect more of the requirements and needs for local sourcing vs. suggesting specific item numbers or vendors. A supporting protocol for use of the form by the Committee will also be drafted.

Additionally, the ECASE team will **continue to offer management of the Google Drive and portals to support the curriculum, training, and assessment management systems**. Over the fourth quarter of year one, the project overhauled a centralized project repository in Google Drive. During the first quarter of year two, the project team emphasized centralization of content to Google Drive, enabling security permissions to specific content for school/teacher/student access and by enabling virtual training and connectivity to subject matter experts in the US. This system has proven to be highly valuable and has increased the overall understanding and access to information across the team. As such, continuous improvement efforts are needed. New content is delivered daily and repositories with appropriate security are needed regularly. As the project continues, the tools, templates, structure, guidance, and security will be enhanced so that the schools may maintain critical content in the future. Critical elements over the next quarter include the following, which are also linked to task 8 of the wind-up plan to provide Model School Sustainability Activities:

- Creation of a central portal for school and MOE access to school specific content
- Creation of a central portal to track calendars and task lists of the project team
- Modification and update of a blocked schedule/calendar to track and sync all training events and materials to individual calendars (when possible)

- Update of content to support the school calendar, needs, and curriculum for the next semester
- Transfer of content from Curricuplan to Google Drive for Semester 2
- Creation of lesson plans to support the curriculum
- Restructuring of content to link all training material, reports, and meeting notes, protocols, etc. to a central repository
- Further refinement of groups and permissions to assure minimal access to content
- Establishment of protocols to support online training, to do lists, and activity completion
- Establishment of a procurement form and protocols to support localization of school material/equipment sourcing
- On-going documentation of project work and plans

To **continue with in-person/in-school curriculum training and support as well as virtual training and support**: As mentioned previously, ECASE offered in-country support for 9.5 weeks, which included formal training, workshops, individual mentoring and running professional learning communities. In addition, ECASE set up and coordinated a distributed team of US disciplinary specialists in five different subject areas to ensure on-going mentoring and support virtually throughout the semester. From mid-October 2013 up to the end of December 2013, ECASE worked with the local Professional Development Teacher Trainer (PD/TT) to train him in his new position to provide on-going sustainability. Unfortunately, since this time, and due to promotional issues with the MOE, the PD/TT coordinator has resigned in favor of an MOE promotion.

While the virtual sessions offer an excellent way to access a variety of experts, not all virtual training sessions were successfully conducted. Obstacles included technology misuses, failure of the teachers to attend, the difficulty of the US consultants to identify the teachers' needs, and/or simply communication across the distances and cultures. That said, several of our US Specialist – Egyptian teacher partnerships resulted in very thoughtful, intellectually and pedagogically challenging sessions for the teachers.

Due to the shortage in teachers, there were an urgent need for The 6 October school to contract university graduate students as teachers in not only Grad 3 but also to fill in for selected Grade 1 and 2 courses. Because the ever-changing schedule of these graduate students, and their late hire, they received minimal training. As a result, the fidelity of implementation of the curriculum at 6 October was uneven. Additionally, until mid-way through the semester, the labs were especially hampered by the lack of appropriate storage and the capacity to unpack all the supplies and equipment to support the curriculum that had been received. Because of this, ECASE spent extensive time in observation and in one on one mentoring with the teachers to support the curriculum implementation to the degree possible under the circumstances. At Ma'adi, implementation of Curriculum 1.0 was generally much smoother, so it was possible to begin to spend time refining teacher practice and focusing on integrating the curriculum between subjects and on analyzing and evaluating student work.

At both schools this semester, (Sept 2013 to January 2014), teachers spent a lot of their meeting time learning how to do capstone journal evaluations. These were essential to the fulfillment of capstone assessment requirements as designed and approved by the Ministry of Education. However, much of the planned curriculum implementation training

had to be deferred until the semester break in January/February 2014. Now that teachers have become much more comfortable with the journal evaluation process and are able to do it more quickly and with a higher reliability, ECASE will work on moving the teachers from novices to more proficient practitioners.

Current experience shows that due to the lack of a stable teacher workforce, especially in Grade 3, a variety of training formats and venues will continue to be essential. University graduate students as teachers have limited time available for their teaching assignments and generally are not available for training with the rest of the STEM school teachers. Until the STEM schools have a stable staff of regular teachers, the time and effort needed for training to ensure implementation of the curriculum by all teachers as designed will be substantial, but unavoidable. To facilitate on-going support, the team plans to continue to utilize virtual training as well as dedicated on-the-ground support. Moving forward, ECASE will provide 6 weeks of on the ground support and a team of staff to support training during the teacher break between semesters (also described in the project management section). On the ground training will be supplemented with virtual training from US experts. A new protocol and schedule currently is under development to provide teachers and team members with an online calendar of training sessions and links to virtual meetings.

To further support the curriculum, **ongoing training and communication with the Capstone Leaders to support the capstone work and grading** was provided by ECASE. Communications with the Capstone Leaders took place through a variety of mechanisms including office hours, topical virtual meetings, weekly Capstone Leader Memos, Face-to-Face and virtual support for training, and weekly scheduled meetings with Capstone Leaders. In addition to the Capstone Leader interactions, trainings with teachers and University teachers took place.

During the time, input and feedback was gathered by ECASE from the Capstone Leaders on the following:

- Establishing the Capstone final grade makeup (personal journals, prototype/model, poster, attendance and discipline)
- Updating and creating Rubrics: Prototype/Model and Poster
- Creating semester Plans utilizing the engineering design process
- Establishing the Capstone Process Learning Outcomes

Capacity building of the educators also occurred through the following support from ECASE:

- Training of trainers on process to train teachers to use the Journal Rubric to evaluate student Personal Journals
- Training of the teachers to grade Student Personal Journals
- Supporting teachers to use the rubrics and to teach the students to use rubrics
- Training of teachers to evaluate Prototypes
- Training of University teachers on Capstones
- Supporting the creation of the structure for the Grade 3 2nd Semester Interest-based Capstones
- Preparation of Action Plans and To do Lists, sample schedules to help prepare and implement public exhibitions
- Onsite support for the four Capstone Exhibitions: Grades 1 and 2 Prototpyes-6 of October; Grades 1 and 2 Prototypes Ma'adi; Grade 3 Models and Posters-6 of October; Grades 1 & 2 Poster-6 of October and Ma'adi

Further, it was the objective of ECASE to **integrate the E-Portfolio requirements with the Capstone process**. The E-Portfolio utilizes an engineering design process that encompasses the delivery mechanism employed for the Capstones. In addition to learning about Egypt's Grand Challenges and connecting to academic content, the students are deeply engaged in the engineering design process. The Capstone learning outcomes are closely tied to the E-Portfolio. A rubric was created to guide the day-to-day work of the Capstone Sessions.

The students used the work from their engineering design process portfolios to support and document their work for the Capstone Exhibitions. The engineering design portfolio supports the Capstone rigor through the use of the engineering design process. Scaffolding is underway to ensure success and sustainability of employing the engineering design process.

Capstone work culminated in an exhibition process showcasing student work. Highlights of the activities include:

- December 29 6th of October Grades 1 and 2 Prototype exhibition at the school. This event went very smoothly with Grade 2 exhibiting in the morning and Grade 1 in the afternoon. Twenty evaluators, including teachers and external evaluators participated in mixed teams.
- December 30 Ma'adi Grades 1 and 2 Prototype exhibition at the Ma'adi school. This event went very smoothly with Grade 1 exhibiting in the morning and Grade 2 in the afternoon. Twenty-seven evaluators, including teachers and external evaluators participated in mixed teams.
- January 1 6th of October Grade 3 Model/Poster exhibition at the Professional Academy for Teachers (PAT) main building. Sixteen teams and eight evaluators participated.
- January 2 Poster presentations for both schools Grades 1 and 2 at The Educational City. Ninety-two teams presented and a team of 26 external evaluators participated.

Each of these events was conducted more smoothly than the previous because we incorporated learnings from each into the evaluator orientation sessions for each subsequent session.

In the next quarter, Capstone training will cycle again beginning with teacher and capstone leader training in early February. In these sessions the teachers and capstone leaders will play an increased role compared to previous semesters to build the capacity to run the Capstone development and implementation processes by the end of the wind up period.

The entire Capstone process aside from training will also be examined and revised as needed based on observations, surveys, other feedback and important lessons learned. The ECASE team will convene for a weekend long intensive design session to frame the Capstone for the second semester at both schools.

An **updated Capstone Leaders Manual** (part of the larger Capstone Manual) will support the work of the Capstone Leaders and teachers. This manual was updated over the

last quarter and is being refined for printing. This manual will be reviewed and updated on a regular basis.

To **revise the PD plan to support Humanities and New Teacher PD in a virtual capacity and finalize options and plan for on the ground PD pedagogy support**, ECASE worked on an overarching plan and accomplished the additional task of delivering one week of pedagogical professional development support and training from November 24-28 by conducting classroom observations, providing one-on-one support for teachers, facilitating professional learning community (PLC) meetings, and sharing resources and tools with school leaders. A professional development consultants was recruited to provide additional on the ground pedagogy support. These new consultants will travel to Egypt at the beginning of the next quarter to conduct new teacher training and increase their familiarity with the overall project. Finally, after a meeting with World Learning and consultation with other ECASE partners, The framework for managing the professional development elements was involved to ensure better integration and long-term sustainability through the development of leave-begin materials. These materials will be developed over the remaining course of the grant in order to prepare the schools to lead their own PD program in the long-term.

To deliver the trans-disciplinary and project-based courses that STEM curriculum demands, teachers must function within a cohesive, professional support network that promotes teamwork and encourages pedagogical innovation. Targeted and on-going training is needed in STEM pedagogy best practices. It was originally envisioned that teachers would go through a series of professional development workshop cycles to build general capacity (this was to include both the Summer Professional Development Institute (PDI) and ongoing training throughout the first and second school years) and then gain specialization and training capacity to provide on-going support to new teachers (during the Summer PDI and ongoing trainings throughout years 3 and 4). With the ongoing high rate of turnover among teachers, delays in adopting the created teacher selection criteria, and travel constraints on the US-based PD team, the current cohort of STEM teachers requires a significant investment in professional development, beyond the scope of the original grant. As such, ECASE must continue to provide support for training of new teachers, boost the skill sets of existing teachers, and finally support the capacity of the humanities teachers who need to develop a curriculum consistent with STEM best practice and integrated with the overall STEM Curriculum. Training will be conducted through a series of virtual workshops and numerous in-person trainings including the recently completed November 24-28 trainings, a number of workshops and coaching sessions scheduled to take place in (including but not limited to the new teacher training scheduled to be held January 19-23), and the anticipated delivery of the Summer Professional Development Institute (2 weeks in June and 2 weeks in August).

In further support of the ongoing PD at both schools, it is critical to provide documentation of the training process and approach so that future teachers and administrators at both schools may utilize the content. All work will continue to be documented through trip reports, the establishment of teaching strategies toolboxes, and the archiving of training materials through Google Drive, such that all STEM school teachers and administrators have access to them for both reference and practical utilization. Finally, the Institute will draft and deliver a master pedagogical PD guide to support the transition of these responsibilities to local parties in Cairo over the course of the remainder of the grant period.

Also during the last quarter, the project provided **ongoing Principal support**. Over 15 hours were used to provide virtual one-on-one coaching and support to the principal of 6th

of October. Support was provided by the principal of MC^2 STEM High School in Cleveland, OH. Meetings were also held in country with the leadership from both schools. Sessions were scheduled on and as needed basis and topics ranged as follows:

- Supporting the capstone process as the head of school. Heavy emphasis on this during the October sessions as teachers were receiving training on the grading of journals and the principal was supporting teachers.
- Understanding the ACT tests (both the test itself and how to effectively proctor the administration of the test on site)
- Dealing with teachers and staff
- Dealing with students who misbehave
- Understanding the school transcript process
- Managing logistics of a complex school environment.
- Understanding the implication of the Capstone Process and understanding principal input about necessary modifications to the current implementation.

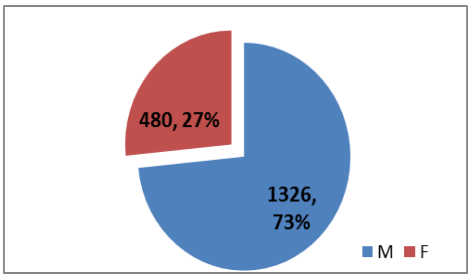
Because most emphasis in this area was placed on Grade 3, only direct support with 6th of October was offered consistently. Going forward, regular sessions are being scheduled with the principals from both STEM schools and a formal engagement plan for in-country support will be created and offered in March 2014. This kind of support has been started for the principal for Ma'adi School in the last week of the quarter and will continue through the duration of the project.

Finally, ECASE supported formative assessment by **loading PARLO Tracker with school data to enable utilization and implementation training**. During October, student, teacher, course and learning outcome data sets for the first semester (for the Math, Science and Capstone courses) were loaded into Tracker for both Ma'adi and 6th October. Individual follow up training sessions were provided to approximately 15 teachers along with on-going office hours support.

During the next quarter and second semester, student, teacher, course and learning outcome data will be collected and loaded into Tracker for the Math, Science and Capstone courses. It is anticipated that the humanities course data will also be loaded in the system. New teachers will be trained on the system late January with all teachers being trained on more advanced features in early February. Ongoing support in the form of office hours will be provided through first quarter. It is anticipated that the system will be rolled out to students and parents during the second semester and user guides will be provided as well as appropriate training sessions.

Objective 3: Strengthen the STEM model of specialized high school focusing on science technology, and mathematics for gifted students (formerly objective 2)

During this quarter, WL supported 28 field trips to 16 different destinations. Number of girls attended these trips were 480 girls however the number of boys were 1326 (some students went several times)



STEM Schools Field Trips during October - December 2013

	Trip To	No. Of Students	Sex	No. Of Students	Sex
1	National Programme for Aviation	75	M		
2	Smart Village	237	M	100	F
3	The Pharaonic Village	50	M		
4	National Center for Water Research	372	M	108	F
5	National Center for Social and Criminological Research	25	M		
6	National Institute for Measurement and Calibration	50	M		
7	Leisure trip - Dream Park	187	M		
8	Microsoft Company			6	F
9	College of Urban Planning - Cairo University	25	M		
10	Religions Complex			153	F
11	Water Treatment Plant	145	M		
12	Research Center			5	F
13	Desert Research Center	70	M	108	F
14	57357 Hospital	27	M		
15	Liver Institute Menoufia	13	M		
16	Meteorological Authority	50	M		
	Total	1326	M	480	F

In addition to **meeting with PPPs and maintaining connectivity** through World learning, ECASE project is also **developing an outline of next steps to build school case statement in support of PPP and student opportunitie**s, Given that the Public Private Partnerships (PPP) are not a luxury, but a necessity to sustain these schools, the PPP team seeks to secure scholarships, direct funding, and in-kind contributions that will enable the STEM model schools to sustain after the project ends. Ideas brainstorming, decisions, and recommendations are the results of the large number of the meetings conducted to build partnerships with the designated parties. The following gives an overview and expected outcomes from meetings and/or visits to; Intel Company, Intel International & Engineering Fair (ISEF), IBM, Siemens, AAIB, INJAZ, the British University in Egypt (BUE), and the Nile University (NU).

The ***Intel Company*** has offered to provide trainings on two programs that would contribute to the capstone projects,. The first program is 'Technology & Entrepreneurship' and the second program is "Technology and Community program". The second training has been cancelled following the negative feedback of students on the basic level of Intel training that does not meet the high profile of our students.

The students have been introduced to the ***Intel International Science & Engineering Fair (ISEF***) concept by representatives from the Ministry of Education and from Intel. It has been agreed that a dedicated trade fair will be organized for both schools on February 9th, 2014. Logistics arrangements meeting were organized to put in action the local fair.

A great interest has been expressed from the ***Microsoft*** team's side with a high potential to build partnerships in the following programs;

- Aspire Women Program
- Career Counselling Program
- Imagine Cup Program

Siemens has shown a great interest to collaborate with the project and provide one scholarship to a STEM student. On the other hand, the Siemens has expressed interest to fund any Energy- related project conducted by the students in their capstone projects. As a matter of fact, Siemens is the world's leading Energy sector offering all kind of services and solutions for the energy conversion chain (power generation, transmission to distribution). Siemens expressed interest in cooperation with the schools in sustainable activities with clear Return On Investment ROI.

The ***Arab African International Bank (AAIB)*** has expressed willing to cooperate with the project through funding some of the operational costs. Therefore, the Bank has requested for a detailed financial data concerning the operational cost of the school.

Following the meeting that started as **DOW** cooperation; ***INJAZ*** are more interested to have activities with our students. INJAZ have developed a program combining three activities (Schools competition -company program - iCamp day brief - Job shadowing) in order to better cater to students needs and potential.

The PPP is also trying to create linkages and build partnerships on various levels with universities. Several meetings were held with the ***Nile University***, **British *University in Egypt (BUE)***.

PPP opened channels of communication with different interested private sector organizations with potential for financial cooperation. Though none is yet finalized worth mentioning the organizations: 1- MobiNil, and 2- Coca Cola.

A total of 14 lecturers in specialized topic such as; Math, Physics, Chemistry, Biology, Computer Science, Geology, and Hydraulic have been successfully recruited. In addition to recruiting 35 from the university staff as evaluators for the Capstone projects in the first semester. A number of 22 Professors have been chosen from the Cairo University and 13 from the Ain Shams University for the evaluation.

The MAF has offered training opportunities at Maadi City Center, Mall of Egypt, and 6th of October City. They also offered booth space for 2 weeks at Maadi City Center to host an awareness campaign about the STEM schools.

To create tools (videos) with which to engage students in extra-curricular opportunities through a combination of in-country and virtual support, ECASE engaged a small team of Institute experts to develop a framework for launching the Discovering Science live science demo program. Ultimately, the program consists of two main video assets:

3. A "how to" video that gives viewers the tools they need to develop a great demo
4. A seed- library of science demos that viewers can watch, adapt, and replicate for their own needs and the needs of their audiences

International research has demonstrated that strategies such as informal, museum-based science education and robust afterschool programs are vital components of STEM education and are a driving force in ensuring later professional success. As such, the project will implement programs to engage students in real-world application of inquiry and STEM content knowledge through the eSTEM Learning Videos / Discovering Science live science demonstrations – to allow students to teach STEM to their younger counterparts and encourage a passion for learning and teaching. This program will serve to:

- Engage students in informal science and technology learning
- Explore STEM topics in a self-directed manner
- Develop an internet library of STEM learning videos created by students
- Increase student understanding of the role demonstrations and hands-on learning play in engaging others in STEM topics
- Increase student self-confidence and awareness about opportunities for careers in STEM

In the past quarter, staff working on this project included four Institute science educators, who led the script writing process and who will star in the videos. Another staff person, who brings extensive filmmaking experience to the group, supported the script writing process, as well as filmed and edited the how to video. The 10-minute final product includes a sample demonstration, deconstruction of that demo from an educational and entertainment perspective, and guidance for viewers who wish to take the next step and produce their own Discovering Science live demo.

Over the course of the next quarter, the Institute's video production team will film a number of science demonstrations to be mapped to the STEM school curriculum and which will be appropriate for viewers to adapt and replicate. As many as 15 videos could be produced in the next quarter and will comprise the seed-library of videos. This Program will be lunched and promoted with the students at both STEM schools through a combination of in-country and virtual sessions. As an extra-curricular program, conducting Discovering Science demos will not be required of all students. However, those students who choose to participate will receive the opportunity to communicate with Institute educators through email and other web-based communication platforms. They will be encouraged to develop their own science demonstrations and to identify curricular connections, just as the Institute staff behind the seed-library will do. Ultimately, this program will result in the establishment of a larger Discovering Science library of videos, the majority of which will be created by STEM school students, which can be shared for free via YouTube and other social media and web-based applications.

In the upcoming quarter, ECASE will solicit inputs from partners and begin to **draft the next revision of the Design Manual for STEM Schools**. Just as the STEM school students are taught that the Engineering Design Process involves iteration to the extent resources and other goals permit. The STEM School Design Model requires refinement as assumptions change and each year provides new learning to inform the model. For these schools to succeed, and for them to be available to impact other schools, codification means at least one more iteration of the model based on the end of this school year and the next school year is needed. The next draft will be completed shortly after the end of the second semester.

The **Design Blueprint continues to be crafted and revised** to respond to the dynamic nature of the ECASE school-work. It will be available in completion at the end of the project and with the revisions made throughout the duration.

Objective 4: Increase student achievement in the STEM model (formerly objective 1)

The English Language Program (ELP) component of ECASE is designed to help students develop the communicative competency they need to successfully engage in and learn from all STEM school activities.

During previous quarter, The ELP supported STEM school students, grade 10, 11, and 12 both in Ma'adi school for girls and October school for boys. In the 2013 first academic semester, the ELP provided English intensive courses for grade 10 students in both schools prior the academic semester started. All grade 10 students set for a baseline test and the students were placed in basic and pre-intermediate levels. The intensive program duration was two weeks, 5 days a week, 7 hours a day. The intensive program was followed with a non-intensive program for 10 weeks. As for Grade 11, the returning students from the 2nd academic in 2012/2013 academic year continued their ELP classes and set for 9 weeks program. The students were enrolled in Intermediate and Conversation levels. The ELP supported grade 12 students as it provided International TOEFL classes to help senior students applying for their undergraduate programs. Grade The program ran for 9 weeks. Additionally, the program supported year 12 students in both Capstone projects and writing their Personal Statements. **Annex A** is Complete English Proficiency Report.

The College guidance program efforts to **collaborate to initiate a college guidance process critical to the year 3 students** rose to a peak in this last quarter. A support was provided to the principal of 6th of October regarding process, deadlines and documentation that was then passed to the students. A GoToMeetings, one-on-one, with 27 students to coach them along their path. Transcripts were created with the schools that mapped the classwork at the school to the descriptions expected from international universities.

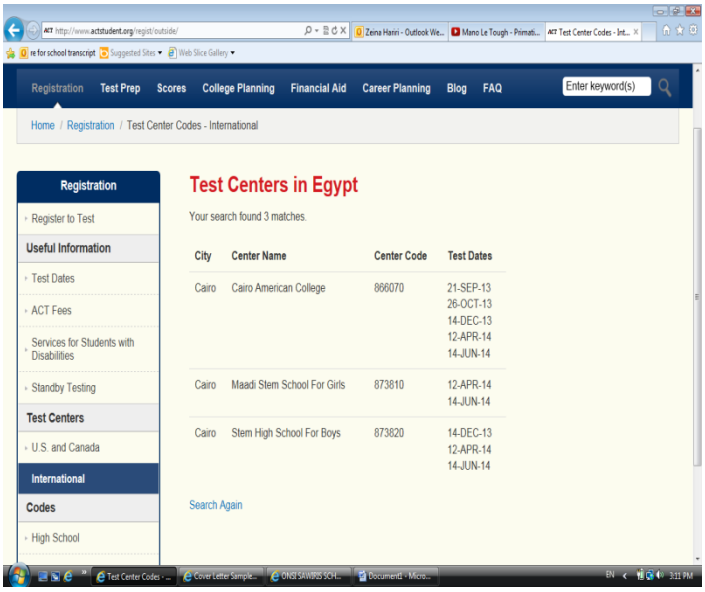
A *Pre-College* questionnaire has been designed for the Grade Three students of the October STEM School that aimed to collect specific data about the students' interests, parents' educational background, point of views on the importance of the college guidance, scores in TOEFL, SAT, and others. The results of the questionnaire have been efficient for the college guidance program to get an overview on the background of the students' needs, social level, and interests. A number of 64 students out of 85 have answered resulting in a total of 47% who most likely prefer to pursue their undergraduate studies in Egypt, and a 53% to study abroad. A specific question was asked regarding the majors and amazingly almost 80% of the students have their minds set and have certain goal that they are after achieving. A set of majors was listed such as; Mathematics, Computer Science, Mechatronics Engineering, etc… this list of majors reflects the high level of education and awareness that the students are having and it gives them priority in getting accepted by the universities.

One of the results of the questionnaire shows that a total of 96% of the students want to attend a college guidance session. Accordingly, the CGP has scheduled for a two hour *College Guidance* session to be held with the Grade Three students in order to give a brief about the role of the college guidance, conduct a presentation on how to write a personal statement, interact with the students, engage them in preparing certain tasks, and last but not least to answer all their questions and be aware of the students' concerns. The main purpose of giving the presentation was to let the students start preparing for the universities admissions requirements. The meeting consisted of a 5min warm up and introduction to the

students, a presentation on the main steps to be taken into consideration as creating an account in the Common Application, checking online the universities' requirements and deadlines, and writing a personal statement to be uploaded once required. A list of expected deliverables was required from them such as, writing and sending the personal statement to be reviewed by the English Language Proficiency teachers, preparing a list of preferred universities, sign up for the ACT test, and create an account on the Common Application. 53 personal statements have been submitted to the CGP, which indicates that 62% of the students show interest and exert effort to meet the requirements of the admissions. Afterwards, the teachers of the English Language Proficiency Program have reviewed all the personal statements and gave constructive comments.

One of the outcomes of the Pre- College Questionnaire is that 53% of the students want to study abroad. Given the limited amount of time remaining to apply, the CGP scheduled 27 meetings with those interested to study abroad. A 20 min College Guidance Meeting was held with each of the 27 students individually. Some of the findings of these meetings show that the students know exactly what they want to study in the university, and they are mostly worried about the payment issue as almost all of them can't afford to pay for the tuition fees and they are hoping to receive the MEK scholarships.

The CGP has provided assistance to the School's Principals of both Maadi and October schools to register and establish an ACT Test Center. Both schools are now officially ACT Test Centers and they have Center Codes on the ACT website as shown in the snapshot. A number of 27 students from Grade Three have applied for the ACT Test at their school on Dec 14th, 2013. The project has purchased the ACT Online Prep Program for the students to enable them to practice and be trained on the ACT test before taking the actual one.



The college guidance program prepared the main documents required for the admissions to almost all the universities. These documents are the School Profile, the Transcript, and the Recommendation Letter. The School Profile gives information on the community and school, its grade levels, design and support, mission and vision, curriculum and instructions, and other useful facts (**Annex B**). Therefore, a School Profile has been created for the October STEM School containing all the substantial data. In addition, two versions of students' transcripts have been developed; an Egyptian- Version Transcript '*Egyptian Secondary School Certificate for Talented Students in Science & Technology*' and the USA- Version Transcript '*STEM High School for Boys 6th October Official High School Transcript*'(**Annex C**). The Egyptian- Version Transcript has been sent to the MOE to get approval on and after a number of modifications applied to it, a final reviewed and approved version has come out and the project has been able to generate transcripts to all Grade Three students. Regarding the USA- Version Transcript, it contains the scores of the students in

their grade levels One and Two, which mostly required by the foreign universities. On the other hand, the students were asked to choose two teachers to write the Recommendation Letter. Furthermore, a session has been held with those teachers to give them directions and guidelines on how to write an effective recommendation letter, and also to stress on the importance of these letters for the students to get accepted.

A second meeting with the students has been conducted to make sure that they are aware with the deadlines and the requirements of the admissions. During this meeting the students were given time to ask questions and discuss further issues and problems that may have encountered them during the application process. In addition, a presentation were given on how to use the Education USA website and examples were given on specific universities to better enable the students to apply and proceed in the application process.

A Call for Partnership has been developed and sent to the American University in Cairo (AUC), the British University in Egypt (BUE), the German University in Cairo (GUC), the Modern Science & Arts University (MSA), and the Misr University for Science & Technology (MUST). The Call for Partnership is mainly a document that gives a description about the university and states the importance of engaging them with the project in order to achieve sustainability for the STEM schools and give better opportunities to the STEM students. (see List of Appendices). As a result of sending out this document to the above mentioned universities, some meetings were scheduled and some collaboration has been established with AUC and BUE.

It is worth to mention that the AUC has shown a great interest to work with the project, and the scholarships team promised to give an info session on the upcoming EMPOWER program which provides full scholarships to the wining applicants. This session is promised to be conducted in January. Also the AUC has been very impressed with the progress done by the project and the students' level of education acquired.

Concerning the meeting at the BUE; Prof. Leslie Croxford, Senior Vice President, has been very collaborative and expressed interests to know more about all the projects funded by the USAID. In addition he requested for a proposal to be sent on January where the main points discussed during the meeting should be listed in order for him to present the proposal during their board meeting and discuss the several opportunities with the President of the University. The main points of partnerships are as mentioned in the Call for Partnership which are; scholarships to the STEM students, the university teachers possibility to give lectures at the school, and the university use of the school's Fab Lab.

Another meeting has been held with the scholarships team at the AMIDEAST, in which several points have been raised and discussed. The AMIDEAST has offered to give info session to the students on the Tomorrow's Leaders program which offers full scholarships to the students to pursue their undergraduate studies at either the American University of Beirut

(AUB) or the Lebanese American University (LAU). Also, the AMIDEAST has expressed willingness to work with the project as a mediator/ channel through which the grant is managed for a scholarship- based program. The meeting with the AMIDEAST has been very efficient as it opened several ways of collaborations, and it created a strong link with one of the leaders of scholarships provision in Egypt. Notwithstanding, the AMIDEAST gets most of its funding from the US embassy, owns the Educate USA website which is very beneficial to the students, and guides them to apply to universities in USA through a program called 'the international student guide to the United States of America'.

In the beginning of December the students were asked to hand in their final list of the universities selected for the college guidance to submit the required documents to each university. As a result a number of 25 students have sent their lists, and the CGP has managed to send out 29 sets of documents by courier on Dec 31st, 2013.

The MIT Egyptian Student Association (ESA) is a student group that aims to help and direct ambitious students who want to apply to the MIT, create a channel between the Egyptian MIT and the people in Egypt, and spread all the news and updates about the MIT. This group has an official Facebook Page, through which the project has been able to get the contact of Perihan, the speaker who conducted the MIT info session at the October school. On December 30th, 2013 58 students from Grade Two and Three have attended this session, and have given a positive feedback as well. The session was very efficient for the students to know about the important steps required to apply to the MIT, and the aspects and pre-requisites that will help them get accepted. Lastly, Perihan has stressed on the importance of the extra- curricular activities, the community serving activities, and the English language.

3. CHALLENGES AND RESOLUTIONS

A variety of challenges have arisen over the last year because of in-country instability, political flux, changes in the MOE, and regular complications due to a project of great size and complexity. A list of these challenges and their associated corrective actions are highlighted below. Because the focus over the past quarter has been to create a wind-up plan for the work, a current list of issues summarizes the risk to the USAID investment if ongoing support to the existing schools is not continued. These items are shared just after the Table.

Major Challenges	Y1, Q1 Corrective Action	Status	Y2, Q2 Corrective Action Planned
Procurement delays to texts and equipment due to customs, late change modifications, and general procurement process delays	Provide as much lead time as possible	In Process	Update procurement procedures to support both long and short term local procurement needs by leveraging new local committee and local sourcing options
Scheduling of virtual and other meetings	Obtain common planning times	In Process – but took too long for Semester 1	Obtain earlier schedule for Semester 2 common planning times and assign local resource to assist in scheduling. Continue to use US staff assigned to support scheduling.
Ongoing political shifts and changes in MOE	Work with current Minister to obtain as many approvals as possible to keep the project on track	In Process	Provide greater documentation to enable quick ramp up due to any future shifts
Limited availability of University instructors and too many demands on teacher time	Prioritize common planning time	In Process	Revise Semester 2 requirements to reduce burden and free up time for more training – provide greater local support for on-going and after school training
General Unknowns that cause rework and added expense	None to Date	Ongoing	Maintain an agile team willing to work within the on-going fluctuations of the project

The risks to the USAID investment if on-going support is not provided are highlighted below.

- Without at least three full years of closely monitored implementation and evaluation of this carefully crafted integrated STEM curriculum, the gains made in country will be completely reversed.
- Removing U.S. support prematurely will result in failure because of curriculum that is neither supported nor taught as designed.

- Past experience indicates that the students and parents will protest loudly if their opportunities are removed or their education is perceived to be in jeopardy, reflecting poorly on USAID and on all project staff.
- If the capstone process, which is central in the integrated curriculum, is terminated before the requested time, the students will fail to enter universities with the promised project-based education and the universities could choose to not admit them or admit them.
- Students will suffer from lack of support of the capstone process, as it supports over 60% of the students' grade, per decree.
- Without adequate time for development and testing, assessments of student achievement will not realistically or validly represent the true status of graduates from these schools, resulting in students failing to get into high quality universities that they would otherwise get into because the measures do not reflect the depth and breadth of student achievement.
- Inadequately developed and validated assessments might result in the over-inflation of student capability that would get them into universities in which they would not do well and ultimately reflect poorly on these schools.
- If a full complement of objective assessment instruments and procedures is not created, the Ministry could default to the national examination the Thenawaya Amma – a test of recall and rote procedures – that would totally negate everything the curriculum supports.
- If support is reduced or eliminated, teachers will revert back to their old habit of lecturing. By removing the student from the center of the equation, the entire investment in the STEM schools could be compromised.
- The strongest model of professional development requires that both teacher and PD staff reflect on their experiences, successes, and challenges. Interruptions to the teacher-PD staff relationship could dramatically undermine the trust and familiarity that has been building throughout the project.
- The schools (students, teachers, administrators, etc.) will feel abandoned if the personal support they expect and need is reduced prior to documentation of improved classroom practices and employment of student-centered approaches.
- The impact on student morale could be devastating if the on-going support to the schools is removed prematurely.
- Extra- and co-curricular programs are necessary for strengthening student understanding of trans-disciplinary connections. Removing these opportunities would undermine the real-world application of the curriculum, which is critical for a STEM school.
- Removing activities will place a large barrier between subsequent graduating classes and college. Students will not have a path forward to transition to college without the proper supports unless local capacity is built, which takes time.
- All college guidance systems are predicated on at least a three-year process. Support beyond the first year enables the schools to have two of the three years. Should it be only one year, then college guidance for STEM students will stop. There will be no one able to support college guidance for STEM students. The students will not be admitted to USA/International and other universities as STEM students.

- Schools would have non-functional laboratories, no mechanisms to provide on-going management of the labs and equipment, and only a portion of the books and resources needed to enable adoption of the curriculum.
- Lack of resources to support the curriculum will directly force teachers to move away from the design curriculum and the investment made by USAID.
- Lack of a curricular management system will create a disaggregated environment with self –interest and lack of communication. A central repository of content for sharing and review is part of the environment model to enable not only sustainability, but potential future replication of these schools.
- Without PPP investment, the schools will first and foremost lose key advocates and will be more likely to succumb to obstacles that will come.
- PPP partners have the voice and sometimes the resources to knock down hurdles or provide a way around them. Without the development of a robust PPP portfolio, labs will suffer, internships will not exist, and extracurricular activities will dry up. Each of these items is critical to the integrated curriculum, student success, and the investment already made in these schools.
- The students involved in applications to USA and International universities and colleges will be admitted with various success but few will be able to matriculate without scholarships. There are no scholarships available for these students to date. The parents and students are not fully aware of this major constraint although they have been warned. On-going communication is needed.
- The college guidance process needs to be codified and an Egyptian school-based college guidance counselor hired to work FULL TIME with the ECASE team. This should be planned at the termination of ECASE.

Annex A: English Proficiency Report

Annex B: School Profile

Annex C: Transcripts Samples (International & MOE)

Annex D: Meetings minutes